ILC Damping Rings WBS - Version Date:					9/1/11			
WBS					Category	Replicon Category	Coordinator * = CAM	Work Description
1					INTERNATIONAL LINEAR COLLIDER DAMPING RINGS ACTIVITIES	ILCDR_1 ILC Damping Rings	M. Palmer*	Activities in support of the ILC Damping Rings technical design
1	1				Project Administration	ILCDR_1.1 Proj Admin		All ILC Damping Ring administrative activities including GDE and ART involvement.
1	*1*	*1*			*Damping Rings Area Group Management*	*ILCDR_1.1 Proj Admin*	*M. Palmer*	*Management and participation in the ILC Damping Rings Area Group*
1	*1*	*2*			*Americas Regional Team Management*	*ILCDR_1.1 Proj Admin*	*M. Palmer*	*Management activities for the ILC Americas Regional Team*
1	*1*	*3*			*Workshop/Conference Support*	*ILCDR_1.1 Proj Admin*	*M. Palmer*	*ILC Damping Rings Workshop and Conference support activities.*
1	2				DR Design Support	ILCDR_1.2 DR Design		ILC Damping Rings design activities including lattice and machine design as well as area group and GDE reporting tasks.
1	*2*	*1*			*Lattice Design and Characterization*	*ILCDR_1.2 DR Design*	*D. Rubin*	*ILC DR lattice design and characterization activities*
1	2	1	1		DTC Lattice Design	ILCDR_1.2 DR Design	D. Rubin	Development of the DTC Baseline Lattice
1	2	1	1	1	Baseline Lattice	ILCDR_1.2 DR Design	DLR/WD	General lattice design including relationship between stacked rings
1	2	1	1	2	Wiggler-RF Straight Optics/Layout	ILCDR_1.2 DR Design	DLR/MAP	Design refinement of the RF-wiggler straights including relationship between stacked rings
1	2	1	1	3	Injection-Extraction Straight Optics/Layout	ILCDR_1.2 DR Design	DLR/MAP	Design refinement of the injection/extraction straights including relationship between stacked rings.
1	2	1	1	4	Harmonic Number Adjustment	ILCDR_1.2 DR Design	DLR/WD	Adjust ring harmonic number for overall ILC compatibility
1	2	1	1	5	Injection/Extraction Line Design	ILCDR_1.2 DR Design	DLR/JSh	Injection and extraction lines from the DR to the entrance of the ELTR/PLTR tunnels
1	2	1	1	6	Wiggler Requirements	ILCDR_1.2 DR Design	DLR/MAP	Updated wiggler requirements for new damping ring baseline and overall ILC operating modes
1	2	1	1	7	Momentum Compaction Adjustments/Flexibility	ILCDR_1.2 DR Design	DLR/WD	Adjust baseline momentum compaction and explore options for adjustable momentum compaction
1	2	1	2		DTC Lattice Characterization	ILCDR_1.2 DR Design	J. Crittenden	Characterize the Physics Performance for the TDR Baseline Lattice
1	2	1	2	1	Dynamic Aperture	ILCDR_1.2 DR Design	DLR/JSh	DA improvement and evaluations for iterating the baseline DTC lattice
1	2	1	2	2	Synchrotron Radiation Estimates	ILCDR_1.2 DR Design	K. Sonnad	Prepare synchrotron radiation distribution estimates for simulations using wall profiles developed as part of Task 1.2.2.3
1	2	1	2	3	EC Build-Up Estimates	ILCDR_1.2 DR Design	JAC/MAF	Prepare EC build-up estimates for all DR operating modes
1	2	1	2	4	EC Instability Estimates	ILCDR_1.2 DR Design	KS/MTFP	Prepare EC instability estimates for all DR operating modes
1	2	1	2	5	Fill Pattern Requirements	ILCDR_1.2 DR Design	M. Palmer	Evaluate fill patter options for all DR operating modes
1	2	1	3		Reporting	ILCDR_1.2 DR Design	M. Palmer	Coordinate Cornell Contributions to ILC GDE Report Structure for ILC TDP-II
1	2	1	3	1	Lattice Design Contributions	ILCDR_1.2 DR Design	D. Rubin	Coordinate baseline lattice contributions to ILC reports
1	2	1	3	2	Physics Results Contributions	ILCDR_1.2 DR Design	K. Sonnad	Coordinate physics simulations contributions to ILC reports
1	2	1	3	3	EC Working Group Report Coordination	ILCDR_1.2 DR Design	J. Crittenden	Coordinate CU contributions to the EC Working Group Report
1	2	1	3	4	Technical Design Contributions	ILCDR_1.2 DR Design	M. Billing	Coordinate technical system contributions to ILC reports
1	2	1	3	5	ILC TDR Coordination	ILCDR_1.2 DR Design	M. Palmer	Coordinate ILC Technical Design Report effort
1	*2*	*2*			*Technical Design Activities*	*ILCDR_1.2 DR Design*	*M. Palmer*	*ILC DR Technical Systems design and support activities including system specifications and design efffort (eg, electron cloud mitigation development, vacuum system support, instrumentation specifications, etc)*
1	2	2	1		Vacuum System	ILCDR_1.2 DR Design	Y. Li	Incorporate EC Mitigations into ILC DR Vacuum Design and Participate in Overall System Design and Costing
1	2	2	1	1	Cross-section Concept by Region	ILCDR_1.2 DR Design	YL/JVC	Develop vacuum chamber profiles consistent with EC mitigation recommendations (needed for overall conceptual design, EC simulations, and costing exercise)
1	2	2	1	2	3.2km Ring Wall Profile	ILCDR_1.2 DR Design	Y. Li	Prepare wall profile based on task 1.2.2.1.1 for use by EC simulation effort
1	2	2	1	3	Vacuum Chamber Conceptual Designs Incorporating ECWG Mitigation Plan	ILCDR_1.2 DR Design	YL/JVC	Conceptual design of complete chambers incorporating EC mitigation recommendations
1	2	2	1	4	Vacuum System Specifications	ILCDR_1.2 DR Design	Y. Li	Participate in overall vacuum system specification
1	2	2	1	5	Vacuum System Cost Estimate	ILCDR_1.2 DR Design	YL/MAP	Participate in vacuum system costing exercise for the TDR
1	2	2	2		Magnet System	ILCDR_1.2 DR Design	M. Palmer	Magnet System Design and Costing
1	2	2	2	1	Re-scale magnet designs	ILCDR_1.2 DR Design	MAP/CS(SLAC)	Adjust conventional magnet specifications and designs for new baseline lattice
1	2	2	2	2	Magnet cross-sections	ILCDR_1.2 DR Design	J. Conway	Provide updated magnet cross sections for ILC reference
1	2	2	2	3	Re-scale power system	ILCDR_1.2 DR Design	MAP/PB(SLAC)	Update power supply system specifications for updated magnet specifications
1	2	2	2	4	Short Period Wiggler Model	ILCDR_1.2 DR Design	J. Crittenden	Prepare short period wiggler model for characterization of the baseline lattice and for
1	2	2	2	5	Wiggler Cryostat Specifications	ILCDR_1.2 DR Design	MAP/JVC	Update wiggler cryostat specifications for final magnet and vacuum chamber specifications
1	2	2	2	6	Updated Wiggler Costing	ILCDR_1.2 DR Design	M. Palmer	Update costing for modified wiggler
1	2	2	2	7	Multi-ring Magnet Stands Concept	ILCDR_1.2 DR Design	J. Conway	Update magnet stand conceptual design for new lattice and multi-ring layout
1	2	2	2	8	Magnet Stands Costing	ILCDR_1.2 DR Design	J. Conway	Updated costing for modified stands
1	2	2	2	9	Updated System Costing	ILCDR_1.2 DR Design	M. Palmer	Updated costing for full magnet and power supply system
1	2	2	3		Instrumentation	ILCDR_1.2 DR Design	M. Billing	Instrumentation System Updates and Costing
1	2	2	3	1	Instrumentation Requirements Review	ILCDR_1.2 DR Design	M. Billing	Review and update of DR instrumentation requirements
1	2	2	3	2	Interface Issues (Magnets, Vacuum, CFS)	ILCDR_1.2 DR Design	MGB/JVC	Review of interface issues between instrumentation and other systems
1	2	2	3	3	Instrumentation System Cost Review	ILCDR_1.2 DR Design	MGB/MAP	Cost review of instrumentation system
1	2	2	4		ILC Central Region Interface	ILCDR_1.2 DR Design	M. Palmer	ILC Central Region Design and Interface
1	2	2	4	1	CR Coordination	ILCDR_1.2 DR Design	M. Palmer	Coordinate interface of DR to injection and extraction systems
1	2	2	4	2	Splitter/Merger Pulsed Element Specifications	ILCDR_1.2 DR Design	M. Billing	Provide specifications for the pulsed element system required for the high power upgrade with 2 positron damping rings
1	2	2	4	3	Splitter/Merger Conceptual Design	ILCDR_1.2 DR Design	M. Billing	Provide a conceptual design for the splitter/merger pulsed elements and costing
1	2	2	5		ILC CF&S Interface	ILCDR_1.2 DR Design	M. Palmer	Damping Ring Interface to the Conventional Facilities & Siting Group
1	2	2	5	1	DTC Layout	ILCDR_1.2 DR Design	J. Conway	Layout specification for damping ring tunnel and support areas
1	2	2	5	2	Inj/Ext Straight Layout	ILCDR_1.2 DR Design	J. Conway	Provide beam line layout information for tunnel layout
1	2	2	5	3	Power Requirements	ILCDR_1.2 DR Design	M. Palmer	Provide updated power/cooling requirements for DR support infrastructure in the tunnel
1	2	2	5	4	Equipment Layout	ILCDR_1.2 DR Design	MAP/JVC	Provide detailed information determining equipment layout tied to lattice for tunnel and alcove design
1	3				Hardware Development	ILCDR_1.3 Hardware Devel		Hardware prototyping for the ILC damping rings using CesrTA
1	*3*	*1*			*Instrumentation Development Using CESR*	*ILCDR_1.3 Hardware Devel*	*M. Palmer*	*Bunch-by-bunch & turn-by-turn beam size monitor development. Development to be carried out at CesrTA.*
1	*3*	*2*			*EC Mitigation Development Using CESR*	*ILCDR_1.3 Hardware Devel*	*M. Palmer*	*Electron cloud mitigation development and vacuum chamber prototyping. Development to be carried out at CesrTA.*